

WHAT IS CLAIMED IS:

1. An oxide superconducting wire composed of a metal substrate, an intermediate layer vapor-deposited by an ion beam assisted deposition method (IBAD method) on the metal substrate, a CeO₂ cap layer vapor-deposited on the intermediate layer, and an oxide superconducting film formed on the cap layer, wherein the thickness of the intermediate layer is no more than 2000 nm, and the thickness of the cap layer is at least 50 nm.

2. The oxide superconducting wire according to Claim 1, wherein the oxide superconducting film comprises an RE-123-based oxide superconductor (REBa₂Cu₃O_{7-x}; RE is a rare earth element including yttrium).

3. The oxide superconducting wire according to Claim 1, wherein the intermediate layer is composed of a material selected from the group consisting of Gd₂Zr₂O₇, YSZ (yttria stabilized zirconium), and MgO.

4. The oxide superconducting wire according to Claim 1, wherein the thickness of the intermediate layer is at least 10 nm.

5. The oxide superconducting wire according to Claim 1, wherein the orientation ($\Delta\Phi$) of the intermediate layer is at least 10 degrees.

6. The oxide superconducting wire according to Claim 1, wherein the orientation ($\Delta\Phi$) of the cap layer is better than the orientation ($\Delta\Phi$) of the intermediate layer.

7. The oxide superconducting wire according to Claim 1, wherein the thickness of the cap layer is no more than 5000 nm.

8. The oxide superconducting wire according to Claim 1, wherein the orientation ($\Delta\Phi$) of the cap layer is no more than 10 degrees.

9. The oxide superconducting wire according to Claim 1, wherein the cap layer is formed by a pulsed laser deposition method (PLD method).

10. The oxide superconducting wire according to Claim 1, wherein the cap layer is formed at a rate higher than a rate at which the intermediate layer is formed.

11. The oxide superconducting wire according to Claim 1, wherein the cap layer is formed at a rate of 1 to 5000 nm/min.

12. The oxide superconducting wire according to Claim 1, wherein the cap layer is formed at a PLD laser energy density of 1 to 5 J/cm².

13. The oxide superconducting wire according to Claim 1, wherein the oxide superconducting film is a Y123 phase, Sm123 phase, or Nd123 phase.

14. The oxide superconducting wire according to Claim 1, wherein the oxide superconducting film is formed by a pulsed laser deposition method (PLD method) or a metal organic deposition method (MOD method).

15. The oxide superconducting wire according to Claim 1, wherein the metal substrate is composed of a material selected from the group consisting of Hastelloy, stainless steel, nickel alloys, silver, and silver alloys.